

**PATENT**  
**AND TRADEMARK OFFICE**

IN THE UNITED STATES PATENT

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Applicants: David E. McDowell and Eric C. Huffman

For: Extraction Cleaning with Heating

Serial No.: 10/710,776

Examiner: Lee D. Wilson

Filed: 08/02/2004

Art Unit: 3727

Docket: 71189-1571

**Declaration of David E. McDowell**

**Under 37 C.F.R. §§ 1.131 and 1.132**

Commissioner for Patents  
PO Box 1450  
Alexandria, VA 22313-1450

Sir:

David E. McDowell declares that:

1. I am a citizen of the United States and a resident of Bradenton Fl. I am an inventor named in the above-identified U.S. patent application.

**37 CFR § 1.132**

2. I am inventor named in the U.S. Patent to Kasper et al. 6,131,237 (Kasper et al.' 237 patent). The Kasper et al. '237 patent claims priority to a Provisional Patent Application No. 60/055,510 filed August 13, 1997, (the '510 provisional application). I am the sole inventor named in the '510 provisional application and am the sole inventor of the inventions which are disclosed in the '510 provisional application. A copy of the '510 provisional application is attached hereto as Exhibit A.

2. I am the sole inventor of the disclosure in the Kasper et al. '237 patent with respect to Figures 23, 23A, and 24-27. The disclosures in the Kasper et al. '237 patent are derived from my invention as disclosed in the '510 provisional application. In particular,

the disclosure of figures 23, 23A, 24-27 in the Kasper et al. '237 patent is substantially identical to Figures 1, 1A, and 2-5 of the '510 provisional application with the exception that the numbers of Figures 23, 23A and 24 in the Kasper et al. '237 patent have been increased by 900 and the numbers in Figures 25-27 of the Kasper et al. '237 patent have been increased by 1000. Further, the number 50 in the '510 provisional application appears as number 951 in the Kasper et al. '237 patent and further canister 1217 has been added to Figure 23 of the Kasper et al. '237 patent. Otherwise the disclosure in the Kasper et al. '237 patent tracks the disclosure in the '510 provisional application and has been derived from my invention as disclosed in the '510 provisional patent application.

**37 CFR § 1.131**

3. I am an inventor of the subject matter of claims 1-15, 17-28, 32-37, 40, 44, and 45 of the above-identified U.S. patent application. I conceived of the invention of these claims prior to October 3, 2000, as evidenced by the '510 provisional patent application. In addition, the subject matter of these claims were constructively reduced to practice with the filing of the application for the Kasper et al. '237 patent before October 3, 2000.

4. The subject matter of the claims 1-15, 17-28, 32-37, 40, 44, and 45 are supported in the '510 provisional patent application as well as in the application for the Kasper et al. '237 patent.

5. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 101 of Title 18 of the United States code and at such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Dated: 4/26/09  
Paul E. McDowell

By

David E. McDowell

# PROVISIONAL APPLICATION FOR PATENT COVER SHEET

(Large Entity)

This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 CFR 1.53(b)(2)

Docket Number	71189-437	Type a plus sign (+) inside this box ⇒	+
<b>INVENTOR(s)/APPLICANT(s)</b>			
Given Name (first & middle)	Family Name or Surname	Residence - City and either state or Foreign Country	
David E.	McDowell	7425 Lime Hollow Drive, S.E., Grand Rapids, MI 49546	
<input type="checkbox"/> Additional inventors are being named on the _____ separately numbered sheets attached hereto.			
<b>TITLE OF THE INVENTION (280 characters max.)</b>			
STEAM/WATER CARPET EXTRACTOR			
<b>CORRESPONDENCE ADDRESS</b>			
<input type="checkbox"/> Firm Name: John E. McGarry RADER, FISHMAN, GRAUER & MCGARRY 171 Monroe Avenue, NW, Suite 600 Grand Rapids, Michigan 49503 (616) 742-3500 (telephone) (616) 742-1010 (fax)		<input type="checkbox"/> Customer Number  Place Customer Number Bar Code Label Here→	
<b>ENCLOSED APPLICATION PARTS (check all that apply)</b>			
<input checked="" type="checkbox"/> Specification	Number of Pages	six (6)	<input checked="" type="checkbox"/> Other (specify) <span style="border: 1px solid black; padding: 2px; display: inline-block;">three (3) pages parts list</span>
<input checked="" type="checkbox"/> Drawing(s)	Number of Sheets	five (5)	
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<input type="checkbox"/> A check or money order is enclosed to cover filing fees <input checked="" type="checkbox"/> The Commissioner is hereby authorized to charge filing fees and credit Deposit Account Number		18-0013	FILING FEE AMOUNT \$150.00

The invention was made by an agency of the United States Government or under a contract with an agency of the United States Government.

- ☒ No.  
☐ Yes, the name of the U.S. Government agency and the Government contract number are: \_\_\_\_\_

Respectfully submitted,

Signature



TYPED or PRINTED NAME

John E. McGarry

REGISTRATION NO. →  
 (if appropriate)

Date

August 13, 1997

22,360

- ☐ Additional inventors are being named on separately numbered sheets attached hereto

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[Page 1 of 1]

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: DAVID E. McDOWELL

For: STEAM/WATER CARPET EXTRACTOR

Docket No. 71189-437

Assistant Commissioner for Patents  
Washington, D.C. 20231

EI074361868US

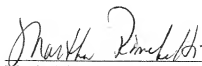
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Dated: August 13, 1997



Martha Rinchetti  
RADER, FISHMAN, GRAUER & MCGARRY  
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### Description of the Preferred Embodiments

With reference now to the drawings, and to FIG. 1 in particular, a cleaning

- 20 wand 10 has an upper end that terminates in a handle assembly 12 and a lower end that terminates in a nozzle assembly 14. An extension tube 16 extends between the handle assembly 12 and the nozzle assembly 14. The nozzle assembly 14 includes an inner conduit 18 that extends between and is in fluid communication with a vacuum inlet 20 and the extension tube 16. A vacuum supply tube 22 is attached to the handle assembly
- 25 12 and is fluidly connected to the extension tube 16, conduit 18 and inlet 20 to provide suction to a surface to be cleaned. Preferably, the vacuum supply tube 22 is connected to a remotely located canister-type carpet extraction cleaner (not shown) having a motor and impeller for creating a source of suction as well as a pump for supplying cleaning fluid or

water under pressure to the cleaning wand 10 and a liquid recovery tank. This type of canister is well-known and therefore will not be described in further detail.

A heating element 24 is located within the nozzle assembly 14 and includes a nozzle 26 that projects into a steam chamber 28. The steam chamber 28 is open at a lower end 30 of the nozzle assembly 14 so that steam projected from the nozzle 26 can be applied to a surface to be cleaned. The heating element 24 is connected to a water tank (not shown) through a water delivery tube 32 and a water supply tube 48. The heating element receives power from the canister through electrical wires 34 and generates steam from the water in a well known manner. A second water delivery tube is arranged in the nozzle assembly 14 and is adapted to bypass the heating element 24 to thereby supply water directly to the surface to be cleaned. Preferably, a lower end of the second supply tube 36 is connected to a spray nozzle 38 to evenly distribute cleaning fluid over a predefined area of the surface to be cleaned. The water tank (not shown) which supplies fluid to the heating element 24 and the spray nozzle 38 can contain a cleaning solution, if desired.

The water delivery tubes 32 and 36 are connected to a selector valve 40 located within the handle assembly 12. A selector control knob 42 (FIG. 1A) is attached to the selector valve 40 and is adjustable between a first normal position 44 for directing the cleaning water from the supply tube 48 to the supply tube 36 and a second steam position 46 for directing cleaning water to the supply tube 32 and into the heating element 24 for producing steam. An aqueous cleaning solution is preferably supplied to the selector valve 48 under pressure from a fluid pump (not shown) located on the canister. A trigger 50 is accessible by a user in an opening 52 of the handle assembly 12. The trigger 50 is pivotally attached to the handle 12 through a pivot pin 54 and includes a finger 56 that is normally biased against the supply tube 48 by a spring 58. The finger 56 in a closed position pinches the tube 48 closed under biasing force of the spring 58. The biasing force is overcome when a user squeezes the trigger 50 to thereby rotate the finger 56 out of contact with the tube 48 and opens the supply tube 48 so that water can flow to the valve 40.

A pair of brushes 60 are mounted in the steam chamber 28 and project below the lower end 30 of the nozzle assembly 14 to thereby assist in loosening debris from the surface being cleaned.

With reference now to FIG. 2, a second embodiment of the cleaning wand 10 is shown, wherein like parts in the previous embodiment are represented by like numerals. This embodiment is similar to the previous embodiment with the exception that the selector valve 40 is positioned within the nozzle assembly 14. The cleaning fluid supply tube 48 is longer than the supply tube in the previous embodiment, while the fluid delivery tubes 32, 34 are shorter than in the previous embodiment. The selector control knob 42 is also positioned on the nozzle assembly 14 instead of the handle assembly for selecting between normal and steam applications. With this embodiment, the entire steam generating and selector unit can be supplied as a separate accessory independent of the handle assembly 12.

In use, the vacuum hose 22, electrical wires 34 and supply tube 48 are connected to a canister-type carpet extraction cleaner. Alternatively, the cleaning wand 10 can form part of a self-contained upright unit having cleaning solution and dirty water tanks, a motor and impeller, liquid pump, etc. In any event, vacuuming can be performed by turning on the motor and impeller to create suction at the vacuum inlet 20 to thereby remove dry or wet debris from the surface being cleaned without applying cleaning solution. When it is desired to apply cleaning solution to the surface, the trigger 50 is squeezed with the selector control knob 42 in the normal position 44. As the trigger is squeezed, liquid in the supply tube 48 passes into the selector valve 40 and through the delivery tube 36 and out of the nozzle 38 onto the surface being cleaned. When it is desired to steam clean the surface, the selector control knob 42 is rotated to the steam position 46 with or without pulling the trigger 50. Thus, steam can selectively be applied to the surface for cleaning difficult spots while continuously squeezing the trigger 50. This feature provides a user with an option to alternate between steam and liquid without releasing the trigger 50. When the selector control knob is adjusted to the steam position 46 and the trigger 50 is pulled, cleaning liquid flows through the delivery line 32 and into the heating element 24 in which it is rapidly heated into steam, projected out of nozzle

26, into steam chamber 28, and onto the surface being cleaned. Any liquid on the surface generated either by the steam or the cleaning liquid is collected at the vacuum inlet and deposited in a dirty solution tank (not shown) in the canister or upright.

With reference now to FIG. 3, a floor scrubber 100 according to the present invention includes a base unit 102 and a handle assembly 104 pivotally attached to the base unit. The base unit 102 includes a vacuum motor 105 and impeller 106 attached to a shaft (not shown) of the motor for generating a vacuum force. A nozzle 108 is located at a forward end 109 of the base unit and is in fluid communication with the impeller for supplying a vacuum force to the nozzle. An elongate beater brush 110 having radially extending bristles 112 is connected to the motor shaft through a drive belt (not shown) or other well known arrangement for rotating the beater brush around its longitudinal axis 114. The base unit 102 also includes a pair of spaced-apart wheels 115 (only one of which is shown) to facilitate manipulation of the floor scrubber along a surface. A solution tank 116 is located at a rearward end 118 of the base unit. A solution pump 120 is fluidly connected to the tank 116 through a hose 122 that extends between an inlet port 123 of the pump and an outlet port 125 of the tank. The pump is preferably powered independently of the vacuum motor through appropriate electrical connections and a pump switch (not shown). Alternatively, the pump can be powered from the vacuum motor through a suitable transmission arrangement. A hose 124 extends between an outlet port 127 of the pump and an inlet port 128 of a diverter valve 126. The diverter valve 126 includes a manually rotatable switch 129 that diverts cleaning fluid under pressure from the hose 124 to one of two outlet ports 130, 132. The switch also includes electrical contacts (not shown) for turning on and off the vacuum motor. The first outlet port 130 is fluidly connected to a spray nozzle 134 via a hose 136. The second outlet port 132 is fluidly connected to a flash steam heater 138 via a hose 140.

The handle assembly 104 includes a trigger 142 for selectively activating the fluid pump 120. An electrical cord holder 144 is attached to a rearward portion of the handle assembly 104.

In use, fluid under pressure from the tank 116 is diverted to either the spray nozzle 134 or the steam heater 138 to alternatively apply cleaning fluid or steam to



a floor or other surface being cleaned depending on the position of switch 129. When the switch 129 is rotated to supply cleaning fluid to the nozzle 134, the switch also turns on the vacuum motor and turns off the steam heater. The beater brush rotates to loosen particles from the surface, and fluid along with any entrained dirt is then picked up by vacuum force at the nozzle 108 and diverted to a collector tank (not shown) in a well-known manner. Conversely, when the switch 129 is rotated to a second position to supply cleaning fluid to the steam heater 138, the vacuum motor is automatically turned off and the steam heater is simultaneously activated.

Referring now to FIG. 4, a floor scrubber 150 according to a further embodiment of the invention is shown, wherein like parts in the previous floor scrubber embodiment are represented by like numerals. The base unit 102 of the floor scrubber 150 includes a steam pump 152, a steam nozzle 154, and a liquid spray nozzle 156. The steam pump 152 has a pressure tank 158 made of stainless steel or other material and a heater 160. The steam pump is positioned in the rearward end 118 of the base unit and the heater 160 is located adjacent to a lower portion of the tank. The pressure tank 158 holds cleaning solution or other fluid. A hose 162 extends from an upper portion of the tank to the steam nozzle 154 and a hose 164 extends from the lower portion of the tank to the liquid spray nozzle 156. A pair of valves (not shown) are preferably located at the upper and lower portions of the tank, but can be located at the steam and spray nozzles, to selectively supply steam or hot solution under pressure to the surface to be cleaned.

In operation, the heater 160 heats the solution within the tank to approximately 212°F (boiling point). With the valves closed, steam is generated under pressure to a superheated state. The generated steam applies pressure to the hot solution and forces the solution to the surface to be cleaned when the hot solution valve 156 is opened. Once in equilibrium, the volumetric flow of hot solution is replaced by the same volume of generated steam under the same pressure. The steam thus serves as a hot solution delivery pump to thereby eliminate a mechanical solution delivery pump. With the hot solution valve closed and the steam valve open, steam is supplied under pressure to the surface to be cleaned. During surface steaming, the vacuum motor can be turned

off or can be on. Although not illustrated, a beater brush 110 shown in FIG. 3. can be provided and operated when the hot solution is applied to the surface.

With reference now to FIG. 5, a floor scrubber 200 according to a third embodiment of the invention is illustrated, wherein like parts in the previous floor  
5 scrubber embodiments are represented by like numerals. The floor scrubber 200 is very similar to the floor scrubber 100 in FIG. 3, with the exception that the flash steam heater 138 is removed from the base unit 102 and positioned in a hand-held hollow wand 206.

The wand 206 includes a grip portion 208 and a nozzle portion 210 attached to an outer end 211 of the grip portion. A flexible, corrugated vacuum hose 212  
10 is attached to an inner end 214 of the grip portion 208. The vacuum hose 212 is fluidly connected to the impeller 106 for providing vacuum to the nozzle portion 210. A trigger 215 in the grip portion 208 serves to both open a valve and provide electrical power to the steam heater 138 in the wand when the trigger is pressed.

A supply hose 216 extends between the diverter valve 126 and steam  
15 heater 138 to supply solution under pressure to the heater when the pump is activated and the trigger is pressed. If desired, the trigger 215 may also serve as a switch for activating the pump.

In use, the steam heater and pump are activated with the vacuum motor turned off such that steam can be applied to pretreat a surface to be cleaned. When the  
20 vacuum motor is turned on, the steam heater is turned off. Liquid solution can then be applied either through the wand or through the spray nozzle 134 and then vacuumed up by the wand or nozzle 108.

Reasonable variation and modification are possible within the spirit of the foregoing specification and drawings without departing from scope of the invention.

## PARTS LIST

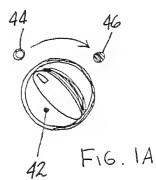
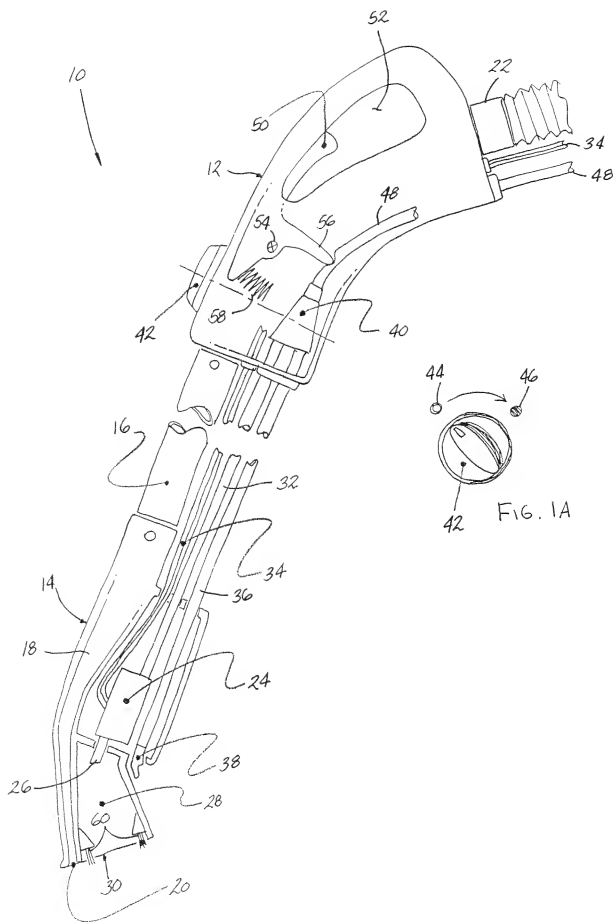
10	cleaning wand
12	handle assembly
14	nozzle assembly
16	extension tube
18	conduit
20	vacuum inlet
22	vacuum supply tube
24	heating element
26	heating element nozzle
28	steam chamber
30	lower end of nozzle assembly
32	water delivery tube
34	electrical wires
36	2nd water delivery tube
38	spray nozzle
40	selector valve
42	selector control knob
44	1st position
46	2nd position
48	cleaning water supply tube
50	trigger
52	handle opening
54	pivot joint
56	finger
58	spring
60	brushes
100	floor scrubber
102	base unit
104	handle assembly

106	impeller
108	nozzle
109	forward end
110	beater brush
112	bristles
114	longitudinal axis
115	wheels
116	solution tank
118	rearward end
120	solution pump
122	hose
123	inlet port
124	hose
125	outlet port
126	diverter valve
127	outlet port
128	inlet port
129	rotatable switch
130	outlet ports
132	outlet port
134	spray nozzle
136	hose
138	steam heater
140	hose
142	trigger
144	cord holder
150	floor scrubber
152	steam pump
154	steam nozzle
156	spray nozzle

158	pressure tank
160	heater
162	hose
164	hose
200	floor scrubber
204	connector
206	hollow wand
208	grip portion
210	nozzle portion
211	outer end
212	vacuum hose
214	inner end
215	trigger
216	supply hose

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FIG. 1



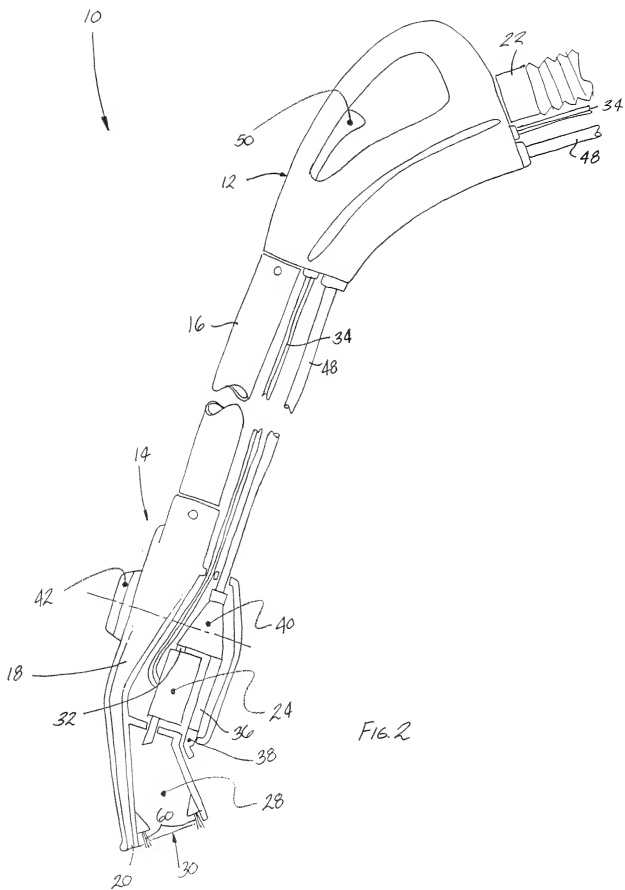


FIG. 2

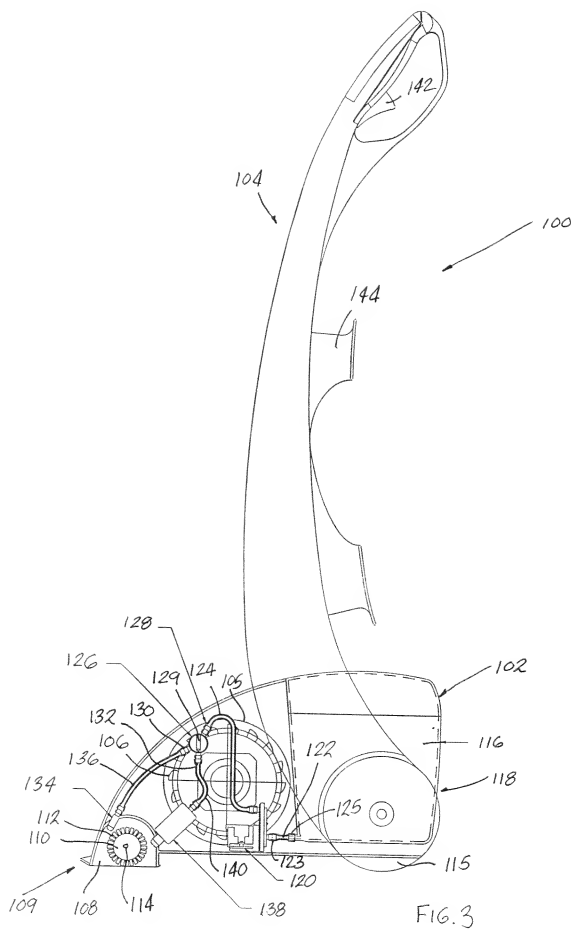


FIG. 3



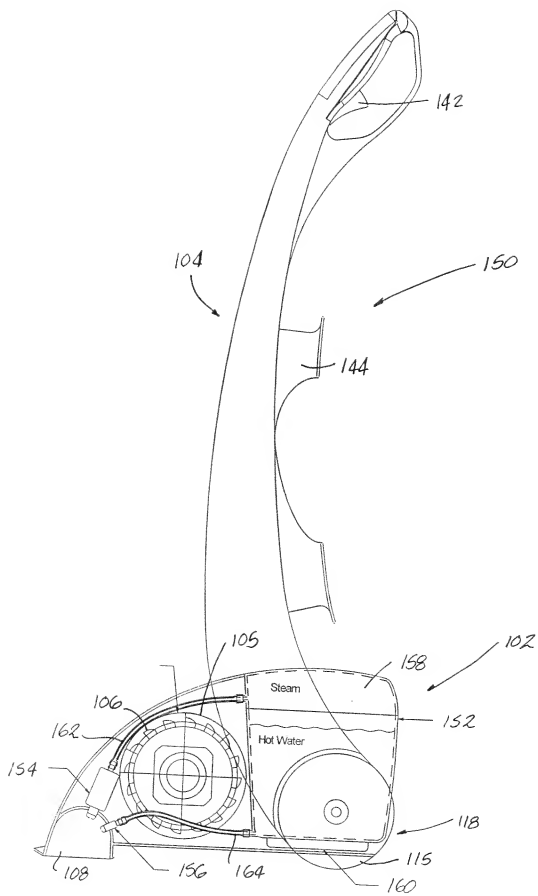


FIG. 4

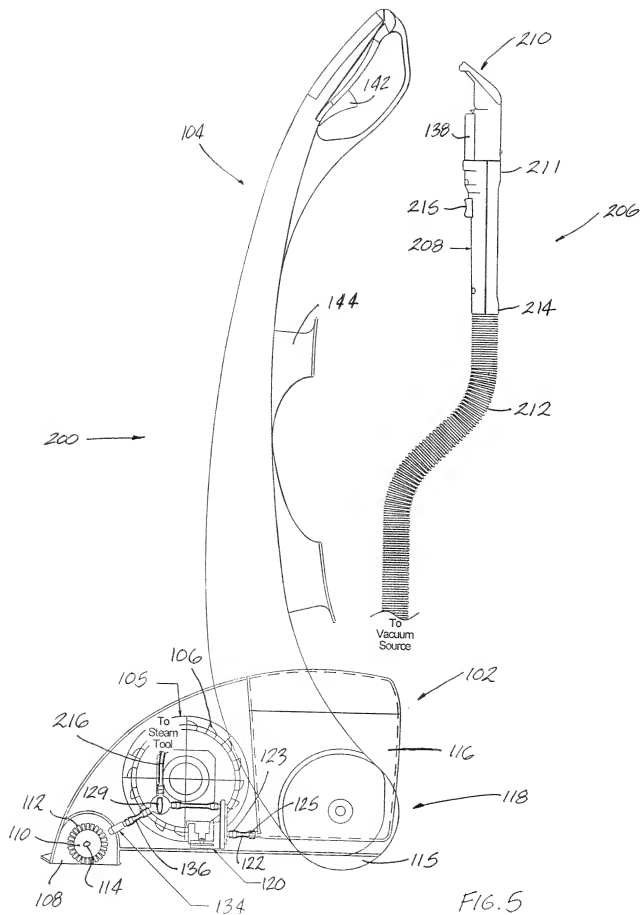


FIG. 5

PROVISIONAL APPLICATION  
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APPLICATION NUMBER	FILING DATE	FIL FEE REC'D	ATTORNEY DOCKET NO.	DRWGS
60/055,510	08/13/97	\$150.00	71189-437	5

JOHN E MCGARRY  
RADER FISMAN GRAUER & MC GARRY  
171 MONROE AVENUE NW SUITE 6000  
GRAND RAPIDS MI 49503

Receipt is acknowledged of this Provisional Application. This Provisional Application will not be examined for patentability. Be sure to provide the PROVISIONAL APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION when inquiring about this application. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. If an error is noted on this Filing Receipt, please write to Box Provisional Application within 10 days of receipt. Please provide a copy of the Provisional Application Filing Receipt with the changes noted thereon. This Provisional Application will automatically be abandoned twelve (12) months after its filing date and will not be subject to revival to restore it to pending status beyond a date which is after twelve (12) months from its filing date.

Applicant(s) DAVID E. MCDOWELL, GRAND RAPIDS, MI.

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